WHAT IS CLAIMED IS:

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1. A protection method of protecting battery cells from over-discharging, comprising the steps of:

monitoring the voltage of each of the 10 battery cells;

controlling a discharge control switch connected between a load and the battery cells in accordance with the voltage of each of the battery cells; and

15 maintaining the discharge control switch in a forced OFF state in accordance with a forced off signal supplied from outside.

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2. The protection method as claimed in claim 1, further comprising the step of releasing the discharge control switch from the forced OFF state in accordance with a release signal supplied from outside.

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3. The protection method as claimed in claim 1, wherein the discharge control switch is released from the forced OFF state when the battery cells are being charged.

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4. The protection method as claimed in claim 1, wherein the discharge control switch is released from the forced OFF state when any of the battery cells is in an overcharged state.

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5. The protection method as claimed in claim 1, wherein the discharge control switch is released from the forced OFF state when the voltage of any of the battery cells reaches a predetermined voltage value.

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6. A control circuit which is controlled in accordance with the voltage of each of battery cells by a monitor circuit monitoring over-discharge of the battery cells, and which controls a discharge control switch disposed between a load and the battery cells,

said control circuit comprising a forced

25 OFF unit which forces the discharge control switch into a forced OFF state, regardless of a monitoring result of the monitor circuit.

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in accordance with the voltage of each of battery cells by a monitor circuit monitoring over-discharge of the battery cells, and which controls a discharge control switch disposed between a load and the battery cells,

said control circuit comprising a forced OFF unit which forces the discharge control switch into a forced OFF state in accordance with a forced OFF signal supplied from outside.

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The control circuit as claimed in claim 7, further comprising a release unit which releases the discharge control switch from the forced OFF state in accordance with a release signal supplied from outside.

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The control circuit as claimed in claim 6, further comprising:

a detecting unit which detects whether the battery cells are being charged or not; and

a release unit which releases the discharge control switch from the forced OFF state when the battery cells are being charged.

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The control circuit as claimed in 30 claim 1, further comprising:

a detecting unit which detects whether the battery cells are being charged or not; and

a release unit which releases the discharge control switch from the forced OFF state when the battery cells are being charged.

The control circuit as claimed in claim o, wherein the discharge control switch is controlled by the monitor circuit when released from the forced OFF state by the release unit.

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10 claim 10, wherein the discharge control switch is controlled by the monitor circuit when released from the forced OFF state by the release unit.

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The control circuit as claimed in claim 6, further comprising:

a detective unit which detects whether the 20 battery cells are in an overcharged state or not; and

a release whit which releases the discharge control switch from the forced OFF state when any of the battery cells is in an overcharged

25 state.

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30 13 14. The control circuit as claimed in claim 7, further comprising:

a detecting unit which detects whether the battery cells are in an overcharged state or not; and

a release unit which releases the discharge control switch from the forced OFF state when any of the battery cells is in an overcharged

state.

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claim 13. The control circuit as claimed in claim 13, wherein the discharge control switch is controlled by the monitor circuit when released from the forced OFF state by the release unit.

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The control circuit as claimed in claim 24, wherein the discharge control switch is controlled by the monitor circuit when released from the forced OFF state by the release unit.

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17. The control circuit as claimed in claim 6, further comprising a release unit which releases the discharge control switch from the forced OFF state when the voltage of any of the battery cells reaches a predetermined voltage value.

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The control circuit as claimed in claim 7, further comprising a release unit which releases the discharge control switch from the forced OFF state when the voltage of any of the battery cells reaches a predetermined voltage value.

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The control circuit as claimed in claim 17, wherein the predetermined voltage value can be set at a desired value.

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19 20. The control circuit as claimed in claim 18, wherein the predetermined voltage value 10 can be set at a desired value.

15 21. A battery unit for supplying power to a load, comprising:

battery cells;

a monitor circuit which monitors an overdischarged state of the battery cells;

a discharge control switch which is controlled by the monitor circuit, and is disposed between the load and the battery cells; and

a forced OFF unit which forces the discharge control switch into a forced OFF state,

25 regardless of a monitoring result of the monitor circuit.

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22. A battery unit for supplying power to a load, comprising:

battery cells;

a monitor circuit which monitors an overdischarged state of the battery cells;

a discharge control switch which is controlled by the monitor circuit, and is disposed

between the load and the battery cells; and
a forced OFF state unit which forces the
discharge control switch into a forced OFF state in
accordance with a forced OFF signal supplied from
outside the battery unit.

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The battery unit as claimed in claim

28. The battery unit as claimed in claim

28. further comprising a release unit which releases
the discharge control switch from the forced OFF

state in accordance with a release signal supplied
from outside the battery unit.

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24. The battery unit as claimed in claim 20 21, further comprising:

a detecting unit which detects whether the battery cells are being charged or not; and

a release unit which releases the discharge control switch from the forced OFF state when the battery cells are being charged.

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30 25. The battery unit as claimed in claim 22, further comprising:

a detecting unit which detects whether the battery cells are being charged or not; and

a release unit which releases the

35 discharge control switch from the forced OFF state when the battery cells are being charged.

The battery unit as claimed in claim 24, wherein the discharge control unit is controlled by the monitor circuit when released from the forced OFF state by the release unit.

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The battery unit as claimed in claim
the discharge control unit is controlled
by the monitor circuit when released from the forced
OFF state by the release unit.

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28. The battery unit as claimed in claim 21, further comprising:

a detecting unit which detects whether the 20 battery cells are in an over-discharged state when the discharge control switch is held in the forced OFF state by the forced OFF unit; and

a release unit which releases the discharge control switch from the forced OFF state when the battery cells are in an overcharged state.

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30 29. The battery unit as claimed in claim 22, further comprising:

a detecting unit which detects whether the battery cells are in an overcharged state when the discharge control switch is held in the forced OFF state by the forced OFF unit; and

a release unit which releases the discharge control switch from the forced OFF state



when the battery cells are in an overcharged state.

The battery unit as claimed in claim wherein the discharge control switch is controlled by the monitor circuit when released from the forced OFF state by the release unit.

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The battery unit as claimed in claim
the discharge control switch is
controlled by the monitor circuit when released from
the forced OFF state by the release unit.

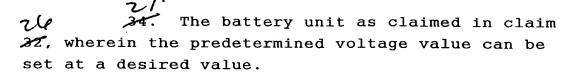
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The battery unit as claimed in claim 21, further comprising a release unit which releases the discharge control switch from the forced OFF state when the voltage of any of the battery cells reaches a predetermined voltage value.

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33. The battery unit as claimed in claim
22, further comprising a release unit which releases
the discharge control switch from the forced OFF
state when the voltage of any of the battery cells
reaches a predetermined voltage value.



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35. The battery unit as claimed in claim 35, wherein the predetermined voltage value can be set at a desired value.

- 36. A control circuit in a protection circuit for a device having a discharge control switch which controls discharge and is situated between a load and battery cells supplying power to the load,
- said control circuit comprising:

 a monitor circuit which judges whether any
 of the battery cells is in an over-discharged state
 or not from voltages inputted from the battery cells,
 and which switches off the discharge control switch
 when any of the battery cells is in an overdischarged state; and

a forced OFF unit which forces the discharge control switch into a forced OFF state in accordance with a signal supplied from outside.

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